UAV-Borne Magnetic Sensors

Quantum Magnetics
An InVision Technologies Company

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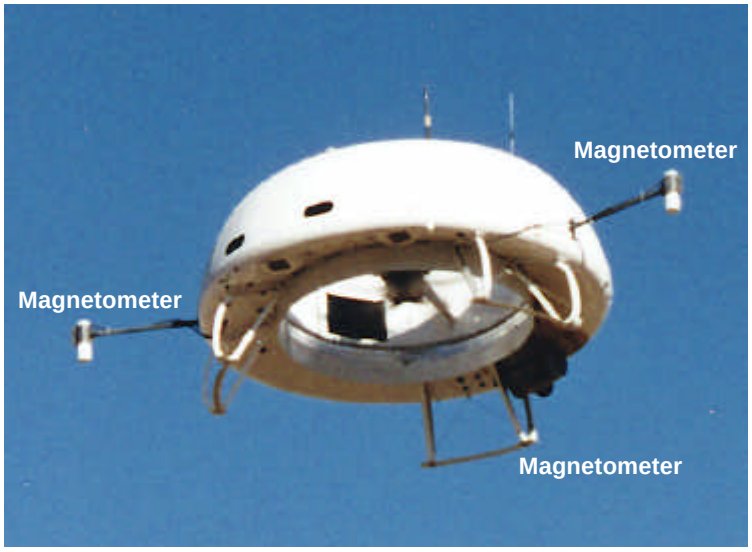
VENDOR DESCRIPTION

Quantum Magnetics (QM) has developed small, lightweight, low-cost, magnetoresistive (MR) sensors operating at ambient temperature with high sensitivity and broad bandwidth. These sensors can be deployed on a UAV or micro-UAV to make high-sensitivity magnetic measurements. The concept picture at right shows a magnetic sensor mounted on each of the 3 booms protruding from the platform. For a fully functional system, QM will need to implement an active cancellation scheme to minimize the vehicle's magnetic interference generated by the motor and generator. QM will also need to implement a passive cancellation of the magnetic fields produced by the steel components of the airborne platform (i.e., engine crankshaft and rotor gearbox). Depending on the application, one or more sensors may be mounted on the platform.



Product Manager
Robotic & Unmanned Sensors
Telephone: (732) 427-5827 / DSN 987
Fax: (732) 427-5072 / DSN 987
e-mail: SFAE-IEWS-NV-RUS@iews.monmouth.army.mil

Magnetic

Power Source	Environmental		
For a UAV with on-board generator: 1W max (per 3-axis sensor) of 15V power For micro-UAV with limited payload (i.e., only one very lightweight sensor deployed on the platform): 1 COTS lithium notebook battery Additional power needed for data transmission	High Temp.	+80°C	Low Temp. -20°C
	Altitude	TBD	
	Humidity	To comply with MIL-STD-810E	
	Immersion	TBD	
	Sand/Dust	TBD	
	Salt	As per MIL-STD-810E, Method 509.2	
	Fungus	TBD	
	Shock/Vibe	TBD	
	EMI/EMC	Shall comply w/MIL-STD-461A, Level CE06, RE02, RE02.1, RS03	

Sensor	Description	Detection		Size/Weight
Magnetic	Detects presence and movement of ferrous metals. Provides direction, and target count. Detects tanks hidden under foliage (i.e., trees) and in barns.	Tracked Vehicle Wheeled Vehicle Personnel	< 100m < 45m N/A	1 sensor node: 10 cm x 10 cm x 10 cm Weight: < 0.5 kg

Device	Description	Features
Monitor	Data acquisition system to be specified for use with UAV. Sensor data passed through on-board computer, then transmitted to the base station by telemetric means for display.	■ 1-3 channels ■ LPI/LPD ultra-short burst transmissions ■ Transmission range depends on UAV